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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,071	07/25/2003	Alexander G. Parlos	017575.0857 (TAMUS 1059)	3031
5073	7590	09/27/2004	EXAMINER	
BAKER BOTTS L.L.P. 2001 ROSS AVENUE SUITE 600 DALLAS, TX 75201-2980			ASSOUAD, PATRICK J	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/628,071	<b>Applicant(s)</b> PARLOS, ALEXANDER G.	
	<b>Examiner</b> Patrick J. Assouad	<b>Art Unit</b> 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-9, 12-15, 18-20 and 23-34 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 10, 11, 16, 17, 21 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/25/03</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Information Disclosure Statement***

1. The information disclosure statement filed 7/25/03 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because references M-O lack a complete and accurate citation. More particularly, we see at the top of the first page of each reference:

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**ABSTRACT**

Modeling Complex Process Systems Using The

Recurrent Multilayer Perceptron. (August 1995)

Omar Rais, B.S., Texas A&M University; M.S., Texas A&M University

Chair of Advisory Committee: Dr. Alexander G. Parlos

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**ABSTRACT**

Adaptive Filtering in Complex Process Systems

Using Recurrent Neural Networks. (August 1996)

Sunil Kumar Menon, B. S., Regional Engineering

College, Trichy-India; M. S., Texas A&M University

Chair of Advisory Committee: Dr. Alexander G. Parlos

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ABSTRACT

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Long-Term Load Forecasting in Electric Power Industry. (August 1997)

Esmail Oufi, B.S.; M.S., Kuwait University

Co-Chairs of Advisory Committee: Dr. Alton D. Patton  
Dr. Alexander G. Parlos

2. Upon ancillary review of the first page of each of these references (reproduced above), we see different dates than that which is indicated by Applicant in his citations on Form 1449. There is some evidence in the record that references M-O are indeed prior art (or known by others) to the instant claimed invention. See at least reference 28 of Parlos et al., "An Algorithmic Approach to Adaptive State Filtering Using Recurrent Neural Networks", IEEE, November 2001. Clarification is required.

3. It is also unclear what the term "ABSTRACT" means in the three citations, given that each of the documents <sup>15</sup>are hundreds of pages long. Correction and clarification is required.

4. The IDS filed by Applicant on 7/25/03 has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is required to clarify the above issues. Applicant is advised that the date of any re-

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submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e).

See MPEP § 609 ¶ C(1).

5. On pgs. 15-16 of the instant Application, Applicant incorporates by reference numerous parent patent applications. According to MPEP 2163.07(b), the information incorporated by reference is as much a part of the application as filed as if the text was repeated in the instant application as filed. In those numerous parent applications incorporated by reference, we see that numerous "TAMUS" documents are referred to therein. For example, on pg. 18 of parent patent application serial no. 09/877,256, we see reference to "TAMUS 1059," and on pg. 20, we see reference to "TAMUS 1058, "TAMUS 1084," and "TAMUS 1097."

6. Pursuant to 37 CFR 1.56 and Applicant's duty to disclose, Applicant is required to submit a copy of all "TAMUS" references cited in the Specification of all parent patent applications which have been incorporated by reference, and which may be relevant to the patentability of the instant claimed invention.

7. Also pursuant to 37 CFR 1.56 and Applicant's duty to disclose, Applicant is required to submit a copy of all relevant documents authored by the instant inventor

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which may be relevant to the patentability of the instant claimed invention. A quick search of the IEEE databases shows that the instant sole inventor, Dr. Parlos, has written numerous papers which predate the instant claimed invention and that appear materially relevant to patentability.

8. The listing of references in the specification (see pgs. 16-17) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Specification***

9. On pgs. 15-16 of the instant Application, Applicant incorporates by reference numerous parent patent applications. Each Specification of the numerous parent patent applications numbered well over 600 pages. The instant Specification contains only 20 pages of disclosure. Applicant is requested to provide a statement or clarification regarding whether the subject matter incorporated by reference is essential or non-essential.

***Claim Rejections - 35 USC § 101***

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 23-33 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language, "Logic for assessing... the logic embodied in a medium" does not conform to the guidelines regarding computer-implemented inventions as seen in MPEP 2106. Logic, per se, is not a machine, a manufacture, or a composition of matter. Applicant is urged to add "computer-implemented" and/or "computer-executable instructions for" and/or "computer program product" and/or the like, and "computer-readable" or similar language, to the claims to conform to the guidelines. Note: The only "medium," discussed in the Specification (pg. 7, lines 25-31) is memory 34 which "stores data instructions used by processor and subsystems 40-54...." The example mediums are all clearly *computer-readable* mediums and should be claimed accordingly. On pg. 10, lines 16-19, we see that "functions may be performed using any suitable logic comprising software, hardware, other logic, or any suitable combination of the preceding." The disclosure of the invention is clearly *computer-implemented* and should be claimed accordingly.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-4, 7-9, 12-15, 18-20, 23-26, 29-31 and 34 are rejected under 35

U.S.C. 102(b) as being anticipated by Patton et al., "Fault Diagnosis in Nonlinear Dynamic Systems via Neural Networks", IEEE, 21-24 March 1994.

13. Patton et al. propose :

A new approach for detecting and isolating faults in nonlinear dynamic processes using neural networks. Two stages are involved. The first is to generate residual signals based on a comparison between the actual and predicated states. A multi-layer perceptron network is trained to predict the future system states based on the current system inputs and states. The paper shows that a satisfactory accurate state prediction for the non-linear dynamic system can be achieved in this way. In the second stage of fault detection and isolation, a neural network is trained to classify characteristics contained in the residuals. Hence, based on the classification given by the network, faults can be detected and isolated. The developed techniques are demonstrated in a laboratory 3 tanks system and promising results are described. [emphasis added by the Examiner]

14. On pg. 1346, col.2, Patton et al. also state:

It must be pointed that this problem has already been solved in model-based fault diagnosis by residual generation [1-4], in which both inputs and outputs of the monitored system are fed into a processor to generate a fault indicator – the residual.

15. And then on pg. 1347, col. 1, Patton et al., state:

Using the residual generation concept developed in model-based fault diagnosis, the weighted difference between actual and estimated output is used as a residual to detect faults. When the magnitude of this residual exceed a pre-defined threshold, it is



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likely the system is faulty. In order to locate faults in the system (fault isolation), a secondary neural network is used to examine features in the residual. A specific feature would correspond to a specific fault location. Based on feature extraction and classification principles, the second neural network can locate (or isolate) faults reliably.

16. As per independent method claim 1, and independent apparatus claims 12, 23, and 34, the following correspondence is seen: receiving a plurality of signals... are the actual outputs (measurement or sensor signals) of a process (device under control) of Figure 1 of Patton et al.; estimating an expected response... and establishing a measured response... are performed by the Predictor NN 1 of Figure 1 of Patton et al.; calculating an output residual... and assessing the condition... is performed by Fault Detection and Isolation NN 2 of Figure 1 of Patton et al.

17. As per dependent claims 2-3, 13-14, and 24-25, one can distinctly associate the claimed "device" or "electrical device" or "electric motor" with any of the electrical elements or devices in the three tank system of Figure 2.

18. As per dependent claims 4, 15 and 26, the sensors and pumps of Patton et al. produce a plurality of monitored electrical outputs.

19. As per dependent claims 7-8, 18-19, 29-30, Applicant defines "spatio-temporal features" as "information from [the] signal [the residue or residual signal] presented in the space and time frame of device 20" (pg. 10, lines 26-28 of the instant Specification).

The Examiner correlates this claimed processing with the requisite processing of the Fault Detection and Isolation NN 2 of Patton et al.

20. As per dependent claim 9, 20, and 31, again see the discussion of requisite processing of the Fault Detection and Isolation NN 2 of Patton et al.

***Allowable Subject Matter***

21. Independent claim 35 and dependent claims 5-6, 10-11, 16-17, 21-22, 27-28, and 32-33, are allowable over the prior art of record.

***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the attached PTO-892. Most notable are those disclosures directly teaching the claimed "fault identification" via "residual evaluation"; i.e. Sauter et al., Dexter et al., Duyar et al., etc.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Assouad whose telephone number is 571-272-2210. The examiner can normally be reached on Tuesday-Friday, 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Patrick J. Assouad', followed by a large, stylized flourish or initial.

Patrick J Assouad  
Primary Examiner  
Art Unit 2857

pja